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Occupational Safety for Workers in Unstable Industries: International and Legal Frameworks of the European Union

Vladyslav Volynets [1] **Ivan Kaylo** [2] **Ivan Yatskevych** [3]
Serhii Boyko [4] **Mariia Denysiuk** [1]

ABSTRACT

Ensuring occupational safety in unstable industries such as construction and agriculture is critical because of the high level of risk to workers. These industries require careful regulation by state and international organizations. The International Labor Organization (hereinafter – ILO) and the European Union (hereinafter – EU) develop standards and directives to protect workers' health in such settings. The purpose of the study is a comparative analysis of these international norms and recommendations for improving national legislation. The following scientific methods were used in the survey: logical method, system method, statistical method, dialectical method, metaphysical method, methods of analysis and synthesis, induction and deduction, formal-dogmatic method, method of comparative law, and method of legal forecasting.

KEYWORDS

occupational safety, unstable industries, international standards, EU standards, working conditions

[1] *Taras Shevchenko National University of Kyiv, Ukraine*

[2] *Kononenko, Kaylo & Partners JSC, Kyiv, Ukraine*

[3] *National University of Kyiv-Mohyla Academy, Kyiv, Ukraine*

[4] *Interregional Academy of Personnel Management, Kyiv, Ukraine*

Correspondence:
Vladyslav Volynets,
Taras Shevchenko National University of Kyiv, Department of Labour Law and Social Security Law, 01033, 60 Volodymyrska Str., Kyiv, Ukraine

Email:
vladyslav_volynets@edu-iosa.org

INTRODUCTION AND BACKGROUND OF THE STUDY

Since precarious working conditions pose a serious risk to workers' health and lives, existing labor laws should give priority to ensuring the safety of workers in precarious enterprises. Industries in which working conditions change frequently due to the intricacies of the production process, economic ups and downs, and technological advances are considered volatile industries. This is true for industries where there is still a significant degree of insecurity, such as mining, construction, and agriculture. Workers in these sectors are exposed to occupational diseases and injuries, which require strict regulation by national and international institutions (Shcherbyna 2024).

The importance of vocational training, which covers both professional skills and information on safe working practices, is particularly growing in emerging economies. Protecting the life and health of employees is the main objective of state policy in the field of occupational safety and health and takes precedence over any financial benefits. A safe workplace helps to reduce the number of accidents and occupational diseases. This is achieved through the introduction of new technologies, improvement of existing production methods, and constant review of safety rules.

The International Labour Organisation (ILO) and the European Union (EU) play a key role in setting occupational safety and health standards by developing recommendations and directives to ensure good conditions in the workplace. The ILO's annual World Day for Safety and Health at Work draws attention to the scale of the problem, with more than 2.78 million deaths each year due to accidents and occupational diseases. This underlines the importance of global efforts in the field of occupational safety and health, as the economic losses from work-related injuries account for around 3.94% of the global GDP (Cremers 2020). In this context, EU directives and ILO standards are crucial for establishing effective occupational health and safety mechanisms aimed at reducing risks in volatile industries. A comparative analysis of these regulatory documents allows us to identify areas for their further improvement and adaptation to modern challenges, which is critical for employee safety and sustainable economic development.

Several scholars have studied the field of labor protection, in particular Polovyi (2023) who investigated the correlation between the exercise of the right to safe working conditions in Ukraine and Europe, focusing on judicial practice. The study emphasizes the importance of clear regulations for workers' right to safe workplace, focusing on the concept of "decent work" recognized in the European framework and the International Covenant on Economic, Social, and Cultural Rights. The author examines the legal aspects of ensuring these rights, concerning various scholars, to compare working conditions in Ukraine and European countries.

Ivchuk (2021) analyses the regulation of labor safety at the international level, focusing on EU and Ukrainian legislation. He emphasizes the importance of implementing the International Labour Organization's international standards into national legislation and draws attention to the main EU directives requiring safe working conditions. The author also identifies the shortcomings of Ukrainian legislation, such as instability and lack of consistency, and emphasizes the need

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to harmonize national regulations with international standards.

Tykhonovych (2024) examines the right of workers to transparent and predictable working conditions, emphasizing the importance of this right for health and economic efficiency. In his article, he analyses EU Directive 2019/1152, which enshrines this right, and its implementation in Ukrainian legislation, in particular, the Labour Code. The author emphasizes the need not only for legislative support but also for a moral obligation of employers to create safe working conditions. Walters and Wadsworth (2020) examine employee participation in workplace safety and health in Europe. The authors analyze how worker representation affects the effectiveness of safety and health measures, emphasizing the importance of the active participation of workers in decision-making processes. The study emphasizes the role of social dialogue and collective bargaining in improving working conditions. Jakob et al. (2021) examine the organization, legislation, and support for occupational health and safety in agriculture in selected European countries. The paper analyses key aspects of the legal framework, available resources, and practices that contribute to improving the safety of workers in the agricultural sector. The authors emphasize the need to implement effective policies and programs to improve working conditions in agriculture.

The purpose of the study is to conduct a comparative analysis of international standards and EU directives on regulating labor safety for workers in high-risk industries (such as construction and agriculture), as well as to develop recommendations for improving national legislation based on international best practices.

MATERIALS AND METHODS

The study of "Regulation of Occupational Safety for Workers in Volatile Industries: International Approach and EU Directives" used a system of scientific methods that allowed for a comprehensive review of occupational safety and health issues, analysis of international standards, and formulation of recommendations for improving legal regulation. General scientific methods included the logical method, which facilitated a consistent presentation of theoretical provisions on occupational safety and health regulation, the systemic method, which allowed us to study occupational safety and health as a complex phenomenon with numerous legal and socio-economic links, and the statistical method, which helped to collect and process data, including accident statistics, making it possible to identify the main trends in occupational safety and health.

Among the general philosophical methods, the dialectical method was used to formulate new scientific provisions on labor safety regulation and study the relationship between legal norms and unstable working conditions. The use of the metaphysical method contributed to a static consideration of the legal status of employees and employers' obligations, which allowed them to be recorded as basic elements in labor safety relations.

Among the general logical methods used were the methods of analysis and synthesis, which facilitated a detailed study of international documents, such as EU directives and ILO standards, and allowed the author to identify the main principles of labor safety regulation and formulate new concepts based on them. Induction and deduction methods made it possible to examine administrative and

legal phenomena, from general principles to specific cases and vice versa, particularly in comparing approaches to legal regulation in EU countries.

Special legal research methods included formal and dogmatic methods, which provided an analysis of legislative acts and their interpretation from a legal point of view. The method of comparative jurisprudence was used to compare the systems of labor safety regulation in EU and ILO regulations and to identify their features and effective practices. The method of legal forecasting was useful in developing recommendations for improving the current legislation, taking into account current trends and possible challenges in the field of occupational safety and health. Interpretation of the current legislation allowed us to clarify the content of the norms regulating occupational safety and draw conclusions about the need to update them.

The application of this set of methods allowed us not only to analyze in depth the legal framework for occupational safety and health in unstable industries, but also to provide reasonable proposals for improving the legal regulation system at both the international and national levels.

RESULTS

It is well known that the global community as a whole bears a heavy burden of costs caused by accidents at work, which result in human suffering and material losses. The scale of the problem is evidenced by the fact that significantly more people worldwide have been injured at work than wounded in combat during the six years of World War II.

Given this, in the second half of the twentieth century, industrialized countries began to pay considerable attention to occupational health and safety and industrial amenities. Today, in European countries, attention is paid to this issue both by states and by the subjects of labor relations. This is manifested in the establishment of a significant number of rules, and technical and legal standards relating to requirements for production facilities, provision of safety devices for machines and machinery, seating for workers, electrical and explosion safety, and the maintenance and operation of steam boilers, protection against radioactive radiation, fire safety, personal protective equipment, temperature and humidity conditions, air environment, noise and vibration, lighting, drinking water, canteens and cafeterias, as well as sanitary facilities and devices (toilets, showers, changing rooms, etc.). It establishes criteria for classifying enterprises according to the degree of their hazard to the health of workers, the responsibility of manufacturers and suppliers of production equipment, and standards for training employees in safe working practices (Dudyk 2024).

At the international level, occupational health and safety are governed by several standards and documents developed by reputable organizations such as the ILO and the International Organisation for Standardisation (ISO). The ILO has established several key conventions and recommendations that form a common framework for ensuring occupational safety and health regardless of industry or geography. One of the main documents is Occupational Safety and Health Convention No. 155 (ILO 1981), which establishes general principles for the development of occupational safety and health policy and imposes responsibility on employers of creating safe working conditions.

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The Convention provides for the implementation of procedures to assess risks and protect employees from accidents, which is actively respected, for example, in the Scandinavian countries, where companies conduct regular audits and train employees on safe working practices (Polovyi 2023).

Another important document is the Promotional Framework for Occupational Safety and Health Convention No. 187 (ILO 2006), which obliges ILO member states to implement national policies and programs aimed at improving occupational safety and health. Thanks to this document, many countries, including those in the European Union, have adapted their laws to create a unified framework for occupational safety and health. For example, Germany has developed and implemented the Vision Zero program, a strategy aimed at achieving zero workplace fatalities, based on this convention. It covers not only large enterprises but also small companies, for which training programs are organized and free consultancy support is offered.

An effective system of labor inspection worldwide is largely shaped by international standards established by the ILO. The two main instruments are Labour Inspection Convention No. 129 (ILO 1969) and Labour Inspection Convention No. 81 (ILO 1947) (industry and trade). Under these criteria, states are required to offer impartial, qualified, and well-funded labor inspection services that have the authority to monitor compliance with labor standards, especially those relating to occupational safety and health.

In the context of OSHA (Occupational Safety and Health Administration) regulations, ILO standards on labor inspection are often used as a benchmark to assess the effectiveness of surveillance in other countries. Unlike the United States, where OSHA has clearly defined mechanisms for monitoring and enforcing legislation, in most countries, including European ones, the effectiveness of inspection is often limited by a lack of resources, low automation, political interference, or limited mandates of inspectors (Smokvina and Kiminchydzhy 2020).

According to a comparative study, Nordic countries (such as Finland and Sweden) have made significant progress in implementing digital inspection technologies, a risk-based strategy, and the autonomy of supervisory authorities. At the same time, Ukraine and other countries in Eastern and Southern Europe often complain about ineffective supervision, formal inspections, and the lack of a quick response to violations. These comparisons show that in order to truly enforce regulations like OSHA, it is important to establish both standards and effective inspection processes. These mechanisms should include sufficient funding, greater openness, the use of digital technologies, and guarantees of the independence of inspectors. Through technical assistance and assessment of compliance with international standards, the ILO, for its part, helps countries modernize their inspection systems.

In addition to the ILO Conventions, the ISO 45001:2018 Occupational Health and Safety Management Systems standard (ISO 2018) is widely used in international practice. This standard provides a unified approach to managing risks in the workplace, focusing on preventing potential hazards and creating an environment where employees are protected from potential injuries. In Japan, where a safety culture is a priority, companies such as Toyota are actively

implementing this standard, which allows them not only to protect their employees but also to reduce the costs associated with workplace injuries. Toyota uses a comprehensive safety audit and monitoring system that includes daily risk checks at all production sites. This helps prevent injuries and illnesses while improving the overall working environment.

The EU has developed several directives to harmonize safety and health conditions among Member States aimed at protecting the health of workers regardless of the industry. The key is the Directive 89/391/EEC on the introduction of measures to encourage improvements in the safety and health of workers at work (Council of European Communities 1989). It covers the general principles of prevention, which include the assessment of risks in the workplace, the introduction of measures to prevent accidents and diseases, the training of staff on occupational health and safety issues, and the involvement of workers in safety decision-making processes.

Thanks to this directive, many EU countries have created internal security audit systems in enterprises that allow identifying potential risks even before they arise. For example, in France, mandatory risk audits are legally regulated in all companies with more than 50 employees. This includes an annual assessment of working conditions with the mandatory involvement of trade unions to analyze and make changes that improve working conditions (Minderhoud 2022).

The EU has created additional rules with minimum safety standards for individual industries where there is a higher degree of risk. Thus, the basis for regulating the construction sector, where working at height and with heavy equipment requires strict safety measures, has been the 92/57/EEC Directive on minimum safety and health standards on temporary or mobile construction sites. The Health and Safety in Construction Act, which obliges construction companies to comply with strict safety requirements, represents the implementation of this directive in the UK. For example, before starting work, risk assessment and careful instruction of workers, especially those who work at height, are carried out at each site. When this rule was implemented in Sweden, construction sites had to have mobile fall prevention equipment, which greatly reduced the number of accidents that occurred there.

The 92/91/EEC Regulation, which sets minimum standards for the safety of workers in the extractive industry, including drilling, is another important regulation. This covers specifications for oil platforms, drilling rigs, and other production facilities, access to which is limited, where massive equipment must operate, and chemicals are present, thus making the working conditions hazardous. This directive is implemented in Norway, where oil production is one of the main sectors of the economy, by establishing strict rules for manufacturing corporations. Each oil production facility has ventilation and emergency shutdown systems, and the personnel regularly receive training on how to evacuate and stay safe in emergencies (Tykhonovych 2024).

The main objective of the Directive 92/104/EEC (Council of European Communities 1992b) is to improve working conditions in the extractive sector, which covers both open and underground mining. The purpose of this directive is to regulate the safety of miners and quarry

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workers working in dangerous and difficult conditions. This regulation has been put in place in Poland, where one of the most important activities is coal mining, requiring mines to have modern ventilation, evacuation routes, and air monitoring systems. Furthermore, in Germany, where there are numerous mines, this directive obliges enterprises to regularly analyze working conditions and provide workers with special protection against dust and for respiration, which reduces the level of diseases among workers (Ivchuk 2021).

In addition to improving overall safety standards, the EU's implementation of these directives promotes a culture of responsibility for the lives and well-being of workers. Many European governments are creating programs to assist small and medium-sized enterprises in adhering to the regulations. This is particularly crucial for high-risk sectors like construction and mining.

In particular, according to paragraph 3 of Part I of the European Social Charter (as amended), all workers have the right to safe and healthy working conditions. Article 3 of Part II of the Charter discloses the following information about this right: The parties agree to: 1. Create, implement, and regularly update a uniform national policy in the areas of occupational health, health, and the working environment to guarantee the successful realization of the right to safe and healthy working conditions. This policy aims to: 1. the adoption of occupational safety and health regulations; 2. ensure the implementation of these regulations by introducing supervision of compliance with their requirements; 3. promote the gradual development of industrial hygiene services intended for all workers whose primary task is to perform preventive and advisory functions; 4. improving the level of occupational safety and health, as well as preventing accidents and injuries arising in connection with it or during its implementation, in particular by minimizing the causes of risks inherent in the production environment.

The creation of a common internal market should improve the standard of living and working conditions for workers in the European Community, where according to the paragraphs 7 and 19 of section I of the Charter of Fundamental Social Rights of Workers; every worker must have safe and satisfactory working conditions and this requires taking the necessary measures to harmonize further working conditions (Yaroshenko et al. 2023).

According to Article 31 (1) of the Charter of Fundamental Rights of the European Union (Council of Europe 2000), every worker has the right to work in conditions that protect his health, safety and dignity. On 17 December 2017, at a special summit on fair labor practices and economic growth in Gothenburg, Sweden, the European Parliament, the Council, and the Commission formally signed the European Framework for Social Rights. Workers have the right to a high level of protection of their health and safety at work (a) by Article 10 of the European Framework of Social Rights (b).

Builders face several risks, including a significant chance of accidents (in 2012, the rate of construction-related injuries was about double that in other sectors, and fatal accidents were three times more common). In addition, many independent contractors and complex subcontracts complicate construction and increase the risk of industrial accidents (Britchenko et al. 2018; Tykhonovych 2024).

The fact that the EU requires other countries to amend their laws, such as the Directives 89/391/EEC and 92/57/EEC when signing association agreements with them, once again demonstrates how important it is for the EU to ensure labor safety in construction. An incomplete list of construction works (for example, underground or earthworks, etc.) and types of construction (such as new construction, reconstruction, technical re-equipment, major repairs, restoration, etc.) to be carried out by the requirements of this act is defined in Annex I of the Directive 92/57/EEC (Council of the European Communities 1992a).

In our opinion, the methodology set out in the Directive 92/57/EEC should be applied when creating this list. It should not be intended to list all potential types of construction projects, but rather to identify those that, during their execution, will not be subject to the stipulated minimum requirements. These minimum standards shall apply to customers, construction managers, general contractors, contractors, subcontractors, and independent contractors, where section I, paragraph 2, General Provisions. Paragraph 5 "Minimum requirements" of the above section describes each of the previously mentioned entities (Davydenko 2020).

Establishing a clear list of individuals classified as employees, employers, and self-employed persons is essential. According to Article 6(b) and (d) of Directive 92/57/EEC, the employer, who is the health and safety coordinator during the project execution stage, shall be responsible for ensuring accident prevention for both employees and self-employed individuals. However, Section IV of the Decree "On Approval of the Minimum Requirements for Labor Protection at Temporary or Mobile Construction Sites" (Ministry of Social Policy of Ukraine 2017) outlines that, during the project execution stage, the safety coordinator is obliged to: 1) ensure that contractors and self-employed persons comply with Section VI of these "Minimum Requirements," the site safety plan, and general labor safety regulations (paragraph 2, item 2); 2) organize coordination among contractors and facilitate their collaboration to protect workers and prevent workplace accidents and occupational diseases. According to Nahorna and Ohorodnyk (2022), this includes establishing a mutual system of information exchange among contractors, employees, their representatives, and independent contractors.

In addition, the term "worker" has a broad definition in the EU and is protected by guarantees of protection in the field of occupational health and safety. Case law of the Court of Justice of the EU facilitates this. In its judgment in the case C-518/15 of the European Court of Justice (2018) specifically stressed that the "concept of 'employee' cannot be interpreted differently by the legislation of the Member States, [as] it has an autonomous meaning specific to the EU". According to established judicial practice, anyone who performs real and meaningful work, which is beyond tasks that are merely supportive or incidental, is considered an employee. According to paragraph 28 of this Decision, "the defining feature of an employment relationship is that for a certain time, such a person provides services to another person and under his leadership, for which he receives a reward".

Similar legal positions are set out in paragraphs 25 and 28 of the judgments in cases C-316/13 (European Court of

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Justice 2015) and C-428/09 (European Court of Justice 2010) respectively. According to the reasonable precedent of the Court, the term "employee" should be defined using objective standards that distinguish labor interactions based on the range of rights and obligations of the parties involved. Therefore, everyone involved in legitimate activities should be classified as an "employee", except small operations, which should be considered as completely peripheral and marginal. According to paragraph 27 of the judgment in case C-316/13 (European Court of Justice 2015), the fact that a person provides services under the supervision of another person for a certain period in exchange for payment is a fundamental aspect of the employment relationship. Mityuk and Yavorsky (2023) analyzed these judgments and concuded that paragraph 28 of the judgment in C-428/09 (European Court of Justice 2010) reflects similar findings.

The European Court of Justice (2016) stresses in paragraph 27 of its judgment in case C-216/15 that "by the case law of the Court, the most important feature of an employment relationship is that during a certain period, a person provides services to another person and under the guidance of another person, for which it receives remuneration, the legal characteristic of which, by national law, is the form and nature of the legal relationship between two persons. Are not decisive in this respect". Under EU law, a person's status as an employee cannot be affected by the "subjective" nature of the employment relationship under national law. Accordingly, the possibility of classifying persons with special needs as "workers" cannot be excluded if only a part of these requirements are satisfied as per paragraph 30 of the judgment in case C-316/13 (European Court of Justice 2015).

In its judgment in case C-256/01, the European Court of Justice (2004) stressed that "the formal classification of a self-employed person under national law does not preclude the possibility that such a person should be classified as an employee according to Article 141 (1) of the Treaty on the Functioning of the European Union (hereinafter – TFEU) (EU 2007) if his independence is only conditional, which only masks the employment relationship". However, the drafters of the TFEU did not intend for the term "employee," as defined in Article 141(1) EC, to include independent service providers who do not have a subordinate relationship with the recipient of the services (EU 2007). This interpretation is supported by paragraph 68 of the Court of Justice of the EU's judgment in case C-256/01 (European Court of Justice 2004).

According to the European Court of Justice, the employee thus differs from other subjects of EU labor law, as Article 3 (a) of the Directive 89/391/EEC defines that the employee should be understood as any person employed by an employer, including trainees and apprentices, but excluding domestic servants (Council of European Communities 1989). This is because the employee performs real activities, except small activities such as marginal and auxiliary activities; is engaged in real, genuine activities, except activities on such a small scale that can be considered purely marginal and auxiliary; and receives compensation for this.

In general, EU legislation in the field of labor protection is based on four basic principles:

1) better standards of labor protection are designed to strengthen competition;

2) legislation on labor protection can bring the expected results only if it is properly implemented;

3) social dialogue remains the main means in the development of labor protection policy, the success of which will depend on the joint efforts of social partners;

4) the emergence of new risks will require the development of new legal norms.

New legal standards and safeguards will be required due to the emergence of new hazards in modern workplaces, particularly psychological risks exacerbated by digitalization, accelerated work schedules, and the blurring of the lines between work and personal life. According to Zlatanovic and Škobo (2023), the "twilight" of traditional occupational health and safety protections in the digital age is characterized by constant connectivity, expectations of permanent availability, and insufficient rest periods. These factors all lead to higher levels of stress, burnout, and other mental health issues. Regulations that specifically acknowledge mental health as a fundamental aspect of occupational health are necessary due to the psychosocial effects of such occurrences. In this regard, Lerouge and Trujillo Pons (2022) analyze the comparative experiences of France and Spain and demonstrate how national and EU legal frameworks can start addressing these issues through the emerging concept of the right to disconnect. According to their results, ensuring that employees stop communicating about work-related matters after hours might be crucial to reducing psychosocial hazards. The legal system must thus change to include new guidelines and safeguards that take into account the reality of modern, digital workplaces and guarantee the comprehensive protection of employees' physical and mental well-being.

The EU's occupational safety policy aims to achieve two main objectives:

1) According to Article 153 of the TFEU (EU 2007), social – protection of employees by ensuring an appropriate level of labor protection;

2) According to Article 115 of the TFEU (EU 2007), economic – ensuring compliance of goods produced within this sector with safety and hygiene standards.

The purpose of ensuring safe working conditions for all workers is shared by the directives of the EU and the standards of the ILO in the field of regulation of labor protection; however, their methods and methods of implementation differ, which is especially important in unstable industries such as mining, construction, and agriculture.

Mandatory criteria that establish basic standards for member states and propose national control mechanisms form the basis of EU directives. For example, businesses should carry out risk assessments, involve employees in safety decision-making, and offer mandatory training in line with the 89/391/EEC Framework Directive, which deals with general occupational safety criteria. Based on this directive, Italy introduced strict guidelines for construction companies to create an occupational safety system. These instructions include requirements for protective structures at height, as well as regular training and inspection of equipment. Thanks to these standards, the number of construction accidents has sharply decreased, which has become a model for other EU countries (Mustchin and Martínez Lucio 2020).

In response, the ILO offers broader proposals that countries can change

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depending on their financial capabilities. The development of national occupational safety and compliance programs are the objectives of the ILO's main conventions, including Occupational Safety and Health Convention No. 155 (ILO 1981) and the Promotional Framework for Occupational Safety and Health Convention No. 187 (ILO 2006). The ILO offers technical assistance to apply these proposals in developing countries such as Brazil and India, helping to create national programs that take into account the unique characteristics of vulnerable industries.

For example, in India, where the agricultural sector is one of the most dangerous, the ILO works with the government to implement safety training programs, including recommendations for working with chemicals and providing protective clothing for workers in the field (Dennerlein et al. 2020).

Despite the common objectives, the EU and the ILO take different approaches to implementation. The Directive 92/57/EEC, which sets out the criteria for temporary and movable construction sites, is one example of an EU regulation with strict rules for certain businesses. Based on this document, national laws were created in countries such as France, that oblige enterprises to supply protective equipment to all builders and conduct the necessary safety briefings before starting work. In the unstable conditions of construction projects, where circumstances can change rapidly depending on the stage of work, it is a useful tool to reduce risks.

In the extractive industry, which is also unstable due to hazardous working conditions such as explosive atmosphere or risk of collapse, the EU applies the Directive 92/104/EEC which requires special safety measures for mines and quarries. For example, this directive was transformed into a national law in Poland, where it obliges mines to have modern gas monitoring and ventilation systems, and the staff to undergo regular training to prevent accidents. This helped Poland significantly reduce the number of deaths in the coal industry, which had been a difficult problem before the adoption of these rules (Sagan and Schüller, 2020).

However, the more lenient requirements of the ILO allow nations to gradually improve working conditions in line with economic realities. In Brazil, for example, because the extractive industry contributes significantly to the country's GDP, the ILO works with the government to promote national initiatives that improve occupational safety in this sector (Ovsak et al. 2024). Here, programs aim to increase employee awareness of safety and encourage employers to implement new risk control methods.

International rules should be changed to reflect the changing dynamics of modern markets to improve worker safety standards in fragile industries. For example, cybersecurity is becoming an important component of employee protection in the context of the rapid technological progress taking place in the IT industry. Today's difficulties require consideration of digital security, even though older standards place greater emphasis on physical safety in the workplace. To protect the physical and mental health of workers exposed to information hazards, persistently high levels of stress, and cyber attacks, EU regulations must adapt to these new hazards. For example, companies that deal with online platforms, or storage of personal data, should provide comprehensive measures to reduce the risk

of "burnout" of the employees who process a large amount of confidential information (Sorensen et al. 2021).

More specific standards for assessing safety in high-risk workplaces could be incorporated into EU rules to improve monitoring and reporting. For example, there are often many injuries in the construction sector, so managers must have clear guidance on assessing compliance with safety regulations at every stage of the project. In addition to assessing the conformity of the facility, this may entail the development of incident response procedures, frequent security checks, and a mandatory review of personnel training methods.

Actively expanding the database of hazardous events in high-risk areas would be a beneficial step for the ILO, as it would enable countries to share data on successful interventions in different contexts. For example, countries can share security management expertise in high-risk manufacturing plants to identify common problems and address them effectively (Walters and Wadsworth, 2020).

Another important proposal is to use the latest technologies, such as digital monitoring platforms. Danger to workers at work can be monitored in real-time using digital devices. For example, in the mining industry, sensors that measure vibration or the amount of hazardous compounds present allow you to quickly respond to changes in working conditions and avoid accidents. Together, the EU and the ILO can create a unified platform for the collection and analysis of massive data that will reflect the dynamics of workplace safety in many countries and sectors. This will make it easier for nations to coordinate more effectively and provide decision-makers with reliable information.

A strong emphasis on the awareness and training is critical to workplace safety. Insufficient training of personnel for new hazards is a common characteristic of unstable sectors. To make sure that every worker is aware of the unique dangers and how to mitigate them, the EU and the ILO can establish uniform guidelines on the training required in these areas. For example, stress management training programs and relaxation techniques can significantly reduce the mental health hazards of employees in the e-commerce industry, where workers often face greater workload and stress.

Another important element of improving workplace safety is international cooperation. Through joint initiatives, the EU and the ILO can incorporate EU best practices into ILO international standards, modifying them for different contexts. For example, effective safety measures for workers in the logistics and transport systems of EU countries can be changed according to the needs of countries with different infrastructures. The development of standards that take into account local characteristics will facilitate such an exchange, guaranteeing more effective international protection of workers in uncertain industries.

DISCUSSION

It is much more difficult to guarantee the safety of workers in unstable industries, where safety rules are constantly changing, and technologies quickly appear due to specific working circumstances and characteristics of industrial processes. To achieve high standards, these enterprises must constantly update their monitoring tools and modify security systems to new conditions. For example, automated surveillance systems and

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unmanned technology are required to detect hazards in real-time in the construction sector, where the high speed of building structures requires the use of the latest materials and technologies. However, since current security systems require significant financial costs, small and medium-sized businesses often cannot afford to deploy them.

By guaranteeing the installation of motion sensors, automated warning systems, and other risk mitigation measures, government assistance in the form of grants and subsidies can help these businesses meet minimum safety criteria. To give small businesses access to advanced technologies at discounted prices or through certain loyalty programs, it is also worth making alliances with digital firms that specialize in labor protection. The lack of job security is another important issue, as many workers in high-risk industries such as services and agriculture work part-time or temporarily. This reduces the chances of safe and effective learning.

For example, safety training becomes a formality in agriculture, where seasonal workers often have short-term contracts because they cannot fully familiarize themselves with all the necessary protocols. It is recommended that businesses create unique, adaptable tutorials that include short training sessions, smartphone apps, or illustrated guides with basic security rules to solve this problem. Even if they do not work long, it will help to minimize the dangers in the workplace and accelerate the training of new employees.

Government agencies may also encourage security in temporary positions by following stricter guidelines on modified training methods and conducting routine corporate compliance inspections. Passing laws that would incentivize businesses to hire full or long-term workers by providing tax breaks for doing so would also help stabilize working conditions. Another strategy is to create information platforms for businesses to share best security practices. This will spread practical solutions and reduce the cost of creating your security tools (Jakob et al. 2021).

The introduction of security measures is seriously hampered by financial constraints, especially in unstable climates. Businesses typically reduce their spending on health and safety during a recession or financial crisis, which can have catastrophic consequences for worker safety. For example, several European businesses drastically reduced safety measures during the 2008 financial crisis, leading to an increase in injuries. Fewer health and safety training programs were offered in Spain, leading to an increase in industrial accidents, as the workers did not have the necessary education and training. Governments should introduce anti-crisis subsidies or tax breaks for businesses that invest in worker safety even in times of economic hardship to reduce the impact of such financial constraints. The creation of new technologies also allows enterprises to automate risky procedures and reduce the risk of human errors.

German automakers such as BMW and Volkswagen, for example, extensively use robots to perform dangerous actions for people. Artificial intelligence ensures the early adoption of preventive measures, which allows analyzing data on risks and predicting potentially dangerous scenarios. Automation and artificial intelligence can significantly reduce health and safety costs, which is extremely important for the enterprises operating in unstable sectors of the economy.

Improving security also requires spending on modern means of protection. In sectors such as the oil and gas industry, the use of materials that provide excellent protection in harsh environments is becoming increasingly important. The risk of hypothermia and other risks associated with extreme working conditions on drilling rigs is significantly reduced by Norwegian enterprises operating in the North Sea, for example, with the help of special protective suits, which consist of materials that provide resistance to moisture and low temperatures.

Creating ongoing training programs for employees that allow them to quickly adapt to and enforce new safety regulations is also critical to improving workplace safety in volatile industries. Especially in an environment where reducing security costs is essential, flexible and low-cost learning formats, including online courses, smartphone apps, short video tutorials, and security infographics, help increase employee knowledge and training. Additionally, cooperation with other companies and organizations in the field of labor protection, for example, through the exchange of experience or joint initiatives, can help reduce the cost of developing and maintaining safety measures (Blažič 2021).

In particular, in unstable areas, EU legislation and international standards are an important basis for ensuring effective security measures. They provide enterprises with standardized occupational health and safety rules that help protect workers from possible risks and ensure consistent application of safety rules in all countries. Public authorities in the Netherlands, for example, carefully monitor business compliance with European safety requirements, especially in the agricultural sector, which is more dangerous due to the use of chemicals and large equipment. This strategy encourages businesses to adopt strict safety rules that force them to follow the procedures and provide workers with safe working conditions even during an economically unstable period.

As a result, employees become more aware and responsible for the compliance with the rules, which promotes a culture of safety. Regular monitoring and risk assessment are also recommended to support this strategy, as they allow you to identify security flaws and solve new problems caused by technological progress or changes in the economy. It is also worth using information campaigns involving employees of all levels to increase the effectiveness of the implementation of European norms and international standards, since this helps creating a sense of shared responsibility and increases motivation to comply.

In addition to improving working conditions, this strategy helps enterprises to develop steadily, increases their credibility as moral employers, and gives them a competitive advantage in global markets. Subsidy programs and cooperation with international organizations that support occupational health and safety can be beneficial for small and medium-sized enterprises, which often lack the funding needed to adopt such standards. This will improve the national and international culture of occupational safety in addition to ensuring compliance with EU regulations and raising public awareness of the value of safety in the workplace.

Even though EU directives and ILO world standards provide progressive criteria for inspection operations, most countries, especially those with limited

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resources or economies in transition, cannot guarantee their full implementation in practice. State labor inspections are often underfunded, have a small workforce, outdated technology, and few modern digital tools for monitoring and responding.

This significantly limits the ability of inspections to quickly detect and eliminate violations, especially in high-risk industries such as mining, construction, and agriculture. The ILO states that in many countries, including several EU members, the workload for each inspector is many times higher than the recommended standard, which makes it physically difficult to reach businesses effectively. It is also important to remember that the ability of the inspection service to levy fines or take prompt action in cases where the lives or health of workers are at risk is limited in many countries.

Even the most precise rules turn into declarations without practical influence if the control bodies are not reformed due to a lack of political will and stable funding. Therefore, in addition to harmonizing laws with international standards, one of the most important requirements for improving the efficiency of the occupational safety system is the institutional ability of the state to guarantee compliance with the requirements through sufficient funding, independence of supervisory authorities, digitalization of processes and frequent training of employees. Thus, in addition to studying the legislative framework, future studies should assess the actual condition of state labor inspections and their ability to fulfill their powers.

CONCLUSION

Since industrial injuries lead to significant material and human losses, the issue of labor protection remains relevant. In response, industrialized countries began aggressively implementing strict national and international rules to protect workers. To improve security in all sectors, especially those that are vulnerable, the ILO and the EU have been instrumental in the creation of relevant conventions and directives such as the ISO 45001 and Framework Directive 89/391/EEC. Thanks to these regulations, many European countries implement full risk mitigation measures, making workplaces safer and reducing the frequency of accidents.

Although the standards of the ILO and the regulations of the EU are aimed at ensuring safe working conditions for all workers, the methods and means of their implementation are very different. For industries prone to instability, including construction, mining, and agriculture, EU laws provide the necessary criteria and minimum standards with specialized control methods. The success of these instructions in reducing the accident rate through strict safety standards is illustrated by examples, especially from Italy and Poland.

In addition, the ILO provides more adaptive recommendations that are adjusted to the financial capabilities of different countries, which allows them to create their own national health and safety initiatives. Through technical assistance and awareness-raising, the ILO assists countries in implementing programs that take into account the unique characteristics of vulnerable sectors, as exemplified by Brazil and India.

International standards should be adapted to the dynamic circumstances of modern markets, especially when new dangers related to technological progress and cybersecurity are considered, to further improve the safety standards of workers in unstable industries. Improving workplace safety involves increased supervision, stricter standards for staff training, and the use of advanced technology.

The integration of best practices and the creation of standards that take into account regional differences may result from cooperation between the EU and the ILO. In addition to improving working conditions in industries that are prone to instability, this will help ensure that workers are adequately protected on a global scale.

Maintaining workplace safety in volatile sectors is a complex affair that requires adjusting to rapidly changing circumstances and technological advances. Businesses in industries such as mining, construction, and agriculture deal with a variety of problems such as lack of funding, seasonal employment, and the need for innovative teaching methods. While investment in new technologies such as automation and artificial intelligence can reduce risks, international standards and EU directives must also be adhered to, in order to ensure uniform principles of occupational safety. The successful implementation of these measures not only increases safety in the workplace, but also contributes to the stable development of companies and the formation of a positive reputation of responsible employers.

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Bezbednost i zdravlje na radu za radnike u nestabilnim industrijama: međunarodni i pravni okvir Evropske unije

PROŠIRENI SAŽETAK

Članak istražuje regulativu bezbednosti i zdravlja na radu u visokorizičnim, nestabilnim industrijama poput građevinarstva, rudarstva i poljoprivrede, kroz prizmu međunarodnih okvira i direktiva Evropske unije. Ovi sektori, zbog svoje inherentne nestabilnosti i visokog rizika od povreda ili smrtnih ishoda, zahtevaju snažne pravne mehanizme i proaktivne bezbednosne protokole. Autori sprovode uporednu pravnu analizu primenom metoda kao što su pravno predviđanje, uporedno pravo i formalno-dogmatska metodologija, s ciljem da ispitaju na koji način međunarodni radni standardi mogu da informišu nacionalno zakonodavstvo, posebno u zemljama u razvoju i tranziciji.

Značajan deo studije posvećen je evaluaciji uloge međunarodnih organizacija, naročito Međunarodne organizacije rada (MOR) i Evropske unije. Ključne konvencije MOR-a, poput Konvencije br. 155 i Konvencije br. 187, čine osnovu globalnih principa bezbednosti na radu. Studija takođe ističe široku primenu standarda ISO 45001:2018 i značaj evropskih direktiva, uključujući 89/391/EEZ, 92/57/EEZ i 92/104/EEZ, u postavljanju minimalnih bezbednosnih standarda. Korišćenjem primera specifičnih za pojedine zemlje – Nemačku, Francusku, Švedsku, Poljsku i Indiju – članak prikazuje kako se ove direktive prilagođavaju nacionalnim kontekstima.

Autori zastupaju stav da se regulatorni model EU – zasnovan na obavezujućim direktivama i standardizovanim minimalnim zahtevima – pokazao naročito efikasnim u smanjenju profesionalnih rizika. S druge strane, pristup MOR-a, koji se oslanja na fleksibilnost i savetodavni karakter, omogućava prilagođavanje u zemljama sa nižim prihodima, ali može oskudevati u pogledu pravne obavezujuće snage.

Članak se takođe bavi novonastalim izazovima, kao što su digitalni rizici i potreba za integracijom sajber bezbednosti u okvire zaštite zdravlja na radu. Predlažu se tehnološka rešenja poput sistema za nadzor u realnom vremenu i automatizacije, uz programe obuke za unapređenje spremnosti radnika u nestabilnim sektorima. Diskusija obuhvata i strukturna pitanja koja utiču na bezbednost, uključujući privremeno zapošljavanje, finansijsku nestabilnost i ograničen pristup naprednim zaštitnim tehnologijama.

Autori predlažu mere kao što su državne subvencije, međunarodna saradnja i razvoj digitalnih platformi koje bi olakšale usklađenost sa regulativom i razmenu najboljih praksi. Zaključno, članak tvrdi da efikasna regulacija bezbednosti i zdravlja na radu zahteva dinamične i adaptivne standarde, utemeljene kako u pravu EU, tako i u međunarodnim okvirima. Harmonizacija najboljih praksi i njihovo prilagođavanje lokalnim uslovima predstavlja ključ za unapređenje bezbednosti radnog okruženja, smanjenje ekonomskih gubitaka usled nesreća na radu i očuvanje dostojanstva i prava radnika na globalnom nivou.

KLJUČNE REČI

bezbednost na radu, nestabilne industrije, međunarodni standardi, standardi Evropske unije, radni uslovi

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